

## CLAIMS

### I Claim:

1. A multifocal intraocular lens for insertion into an enucleated natural lens capsule of an eye, said lens comprising:

a lens body having a substantially elliptical anterior surface, a substantially elliptical posterior surface, an upper portion, and a lower portion,

said lower portion having a semicircular shape and tapering upwardly toward said upper portion to create a tapering periphery;

said anterior surface and said posterior surface of said upper portion each having at least one radius of curvature,

wherein said lens body encompasses the optical axis of the eye depending upon the position of the eye.

2. The multifocal intraocular lens of Claim 1, wherein said at least one radius of curvature of said posterior surface of said upper portion is shorter than said anterior surface of said upper portion.

3. The multifocal intraocular lens of Claim 1, wherein said anterior and posterior surfaces of said upper portion of said lens body each have multiple radii of curvature.

4. The multifocal intraocular lens of Claim 3, wherein said at least one multiple radii of curvature of said posterior surface of said lens body is shorter than said multiple radii of curvature of said anterior surface.

5. The multifocal intraocular lens of Claim 1, wherein a cross-sectional profile of said lens body is comma-shaped.

6. The multifocal intraocular lens of Claim 1, wherein said lens body has at least one index of refraction.

7. The multifocal intraocular lens of Claim 6, wherein said lens body has multiple indices of refraction.

8. The multifocal intraocular lens of Claim 7, wherein said lower portion of said lens body has a greater index of refraction than said upper portion.



9. The multifocal intraocular lens of Claim 1, wherein said lens body is substantially aspheric.
10. The multifocal intraocular lens of Claim 1, wherein said lens body comprises a material that is not colorless.
11. The multifocal intraocular lens of Claim 1, wherein said material is selected from the group consisting of silicone, acrylic, and polymethylmethacrylate.
12. A multifocal intraocular lens for insertion into a lens capsule for placement within an eye having a posterior chamber and an anterior chamber, said lens comprising:
- a lens body having a substantially elliptical anterior surface;
  - said lens body having a substantially elliptical posterior surface;
  - said lens body having an upper portion and a lower portion;
  - said lower portion having a semicircular shape and tapering upwardly toward said upper portion to create a tapering periphery;
  - said anterior surface and said posterior surface of said upper portion, each surface having at least one radius of curvature;
  - a lens capsule having an anterior surface and a posterior surface and adapted to be positioned within the eye, said lens body being disposed within said lens capsule;
  - a substance dispersed within said lens capsule for allowing said lens body to move within said lens capsule; and
  - wherein said lens encompasses the optical axis of the eye depending upon the position of the eye.
13. The multifocal intraocular lens of Claim 12, wherein said lens capsule is approximately the size of the natural lens to be replaced.
14. The multifocal intraocular lens of Claim 13, wherein said lens capsule is positioned in the posterior chamber of an eye.
15. The multifocal intraocular lens of Claim 13, wherein said lens capsule is positioned in the anterior chamber of an eye.
16. The multifocal intraocular lens of Claim 12, wherein the distance between said anterior and posterior surface of said lens capsule defines a thickness, said lens capsule having a first axis extending generally perpendicular to said anterior and posterior surfaces and a second axis generally perpendicular to said first axis that defines a width.



17. The multifocal intraocular lens of Claim 16, wherein the thickness of said lens capsule along the first axis is smaller than its width along its second axis.
18. The multifocal intraocular lens of Claim 16, wherein said lens capsule is adapted to be positioned in the eye so that the first axis is approximately parallel with the optical axis of the eye.
19. The multifocal intraocular lens of Claim 12, wherein said lens capsule is not colorless.
20. Said multifocal intraocular lens of Claim 12, wherein said lens capsule comprises a member selected from the group consisting of silicone, acrylic, and polymethylmethacrylate.
21. The multifocal intraocular lens of Claim 12, wherein said lens capsule is substantially pliable.
22. The multifocal intraocular lens system of Claim 12, wherein said lens capsule has at least one index of refraction.
23. The multifocal intraocular lens system of Claim 12, wherein said at least one radius of curvature of the posterior surface of said upper portion of said lens body is shorter than said upper portion of said anterior surface of said lens body.
24. The multifocal intraocular lens system of Claim 12, wherein said anterior and posterior surfaces of said upper portion of said lens body each have multiple radii of curvature.
25. The multifocal intraocular lens system of Claim 24, wherein said at least one radii of curvature of said posterior surface of said lens body in the aggregate are shorter than said multiple radii of curvature of said anterior surface.
26. The multifocal intraocular lens system of Claim 12, wherein a cross-sectional shape of said lens body is comma-shaped.
27. The multifocal intraocular lens system of Claim 12, wherein said lower portion of said lens body has a greater index of refraction than said upper portion.
28. The multifocal intraocular lens system of Claim 12, wherein said lens body is substantially aspheric.
29. The multifocal intraocular lens system of Claim 12, wherein said lens body comprises a material that is not colorless.
30. The multifocal intraocular lens system of Claims 12 or 29, wherein said lens body comprises a material selected from the group consisting essentially of silicone, acrylic, and polymethylmethacrylate.
31. The multifocal intraocular lens system of Claim 12, wherein said substance is not colorless.



32. The multifocal intraocular lens system of Claims 12 or 31, wherein said substance is a member of the group consisting of silicone, gel, sol, liquid, oil, and acrylic.
33. The multifocal intraocular lens system of Claims 12, wherein said substance slows movement of said lens body within an enucleated natural lens capsule compared to movement of said lens body in the absence of said substance.
34. The multifocal intraocular lens system of Claim 12, wherein said lens system further comprises a securer.
35. The multifocal intraocular lens system of Claim 34, wherein said securer comprises at least two spring-like structures that extend from opposite sides of said lens capsule.
36. The multifocal intraocular lens system of Claim 35, wherein said securer has at least two spring-like structures.
37. The multifocal intraocular lens system of Claim 36, wherein said spring-like structures comprise two half-ticks.
38. The multifocal intraocular lens system of Claims 35 or 36 or 37, wherein said securer holds said lens capsule in place within the eye.